AMENDMENTS TO THE CLAIMS

Claims 1-34 (Canceled)

35. (Previously presented): A method for extracting manganese from a multi-component solution, comprising:

a) contacting the multi-component solution with a reagent to create a reaction solution, wherein the reagent comprises a quaternary ammonium compound, a hydrogen ion exchange reagent and an organic solvent (QL reagent); and

b) removing one or more non-manganese impurities from the reaction solution to create an impurity depleted reaction solution; and

c) extracting manganese from the impurity depleted reaction solution.

36. (Previously presented): The method of claim 35, wherein the pH of the solution remains constant.

37. (Previously Presented): The method of claim 35, wherein step (b) comprises stripping the reaction solution by contacting the reaction solution with an acid; oxidizing and precipitating one or more of the impurities in the reaction solution; and removing the oxidized and precipitated impurities from the reaction solution to create an impurity depleted reaction solution.

38. (Previously presented): The method of claim 37, wherein the acid comprises a non-oxidizing acid.

39. (Previously presented): The method of claim 37, wherein calcium is extracted from the reaction solution during the stripping step.

40. (Previously presented): The method of claim 35, wherein calcium is extracted from the multi-component solution in a further step comprising: introducing manganese-rich strip solution to the reaction solution; displacing calcium from the reaction solution; and scrubbing the displaced calcium from the solution.

41. (Previously presented): The method of claim 40, wherein the manganese-rich strip solution contains an organic phase/aqueous phase (O/A) ratio between 5-20.

42. (Previously presented): The method of claim 35, wherein the multi-component solution comprises geothermal brine.

43. (Previously presented): The method of claim 42, wherein the geothermal brine contains zinc which is removed from the multi-component solution through a step comprising: contacting the multi-component solution with a reagent to create a mixture, wherein the reagent comprises a quaternary ammonium compound and a hydrogen ion exchange reagent; contacting the mixture with pure H_2O; and separating the zinc from the mixture.

44. (Previously presented): The method of claim 35, wherein a phase modifier is contacted with the reaction solution in step (a).

45. (Previously presented): The method of claim 35, wherein the impurity depleted reaction solution comprises manganese chloride.

46. (Previously presented): The method of claim 35, wherein in step (c) the impurity depleted reaction solution is combined with an acid to produce an electrolyte bath.

47. (Previously presented): The method of claim 46, wherein the acid is sulfuric acid or hydrochloric acid.

48. (Canceled)

49. (Previously presented): A method for extracting manganese from a composition containing an impurity, comprising:

a) contacting a composition containing manganese and one or more impurities with a QL reagent to create a reaction solution;

b) contacting the reaction solution with an acid;

c) oxidizing and precipitating one or more of the impurities in the reaction solution;

d) removing the oxidized and precipitated impurities from the reaction solution to create an impurity depleted reaction solution; and

e) applying an electric current to the impurity depleted reaction solution and removing the manganese therefrom.

50. (Previously presented): The method of claim 49, wherein the QL reagent comprises a quaternary ammonium compound, a hydrogen ion exchange reagent and an organic solvent.

51. (Previously presented): The method of claim 49, wherein the acid is a non-oxidizing acid.

52. (Previously presented): The method of claim 49, wherein all components of step (a) are performed under anoxic conditions.

53. (Canceled)

54. (Previously presented): A method for extracting manganese from an multi-component solution, comprising the steps of:

a) obtaining a zinc and calcium depleted hydrochloric acid solution containing manganese and one or more impurities;

b) removing the one or more impurities from the solution by oxidizing the impurities, such that the impurities precipitate leaving a supernatant containing manganese chloride; and

c) electrowinning the supernatant in a hydrochloric acid bath, such that electrolytic manganese dioxide forms a deposit.